Topic: Weather

2-3 The student will demonstrate an understanding of daily and seasonal weather conditions. (Earth Science)

Key Concepts: air, temperature, wind direction, wind speed, precipitation, rain, snow, sleet, hail, seasons, Beaufort scale, wind sock, wind vane

Supporting Content Web Sites

Watch Out …Storms Ahead
www.nws.noaa.gov/om/brochures/OwlieSkywarnBrochure.pdf
This new version of Owlie Skywarn's Weather Book is in a very large pdf file. There is a full coloring book that can be downloaded and separate chapters on hurricanes, tornadoes, lightning, floods, and winter storms. There are also weather quizzes for kids.
2-3.3; 2-3.6

The Weather Dude
http://www.wxdude.com/kidres.html
Interesting and interactive weather resources website for kids. Sing along with the Weather Dude and learn about precipitation, weather patterns, and more. Lots of resources and links.
2-3.1; 2-3.2; 2-3.3; 2-3.4; 2-3.5; 2-3.6

Play Time For Kids
www.nws.noaa.gov/om/reachout/kidspage.shtml
This website has been designed to help kids learn about hurricanes, winter storms, thunderstorms, and other hazardous weather. Under the category "Other Fun Stuff" there are games and links.
2-3.1; 2-3.2; 2-3.3; 2-3.4; 2-3.5; 2-3.6

Web Weather For Kids
http://eo.ucar.edu/webweather/
Learn what makes weather wet and wild, do cool activities, and become "hot" at forecasting the weather!
2-3.1; 2-3.2; 2-3.3; 2-3.4; 2-3.5; 2-3.6

Billy and Maria – Coloring Books for Kids – Weather
www.nssl.noaa.gov/edu/bm/bm_main.html
These coloring books help kids learn about weather safety during tornadoes, winter weather, and thunderstorms.
2-3.3; 2-3.6

Weather Quiz @ Explorit! Science Center
www.dcn.davis.ca.us/go/explorit/science/weather.html
35 of your most frequently asked questions about weather and climate, plus a self-correcting web weather quiz. This site is designed for older elementary students and so would be most appropriate for stronger readers.
2-3.1; 2-3.2; 2-3.3; 2-3.4; 2-3.5; 2-3.6

Weather Experiments
http://www.weatherwizkids.com/WxExperiments.htm
Lots of weather experiments as well as photos and art, weather jokes, weather folklore, flashcards, and games.
2-3.1; 2-3.2; 2-3.3; 2-3.4; 2-3.5; 2-3.6

Kid's Hazard Quiz
www.ngdc.noaa.gov/seg/hazard/kqStart.shtml
Students can select a quiz subject from thunderstorms, tornadoes, hurricanes, floods, and more. Students can also set up a family disaster plan from this web site.
2-3.3; 2-3.6

Miami Museum of Science: How Does a Hurricane Work?
www.miamisci.org/hurricane
Students can visit with a family that survived a hurricane, learn about weather instruments, and go "inside" a hurricane.
2-3.3; 2-3.4; 2-3.6

Suggested Literature

Branley, Franklin M.. (1999) *Flash, Crash, Rumble, and Roll*. New York: Harper Trophy.
ISBN: 0064451798
Lexile Level: 500L
A simple treatise on thunder and lightning. Diagrams and labels included, plus 2 simple weather experiments and a list of 3 internet weather sites.
2-3.3; 2-3.6

Branley, Franklin M.. (1997) *Down Comes the Rain*. New York: Harper Trophy.
ISBN: 0064451666
Lexile Level: AD560L
Provides a fundamental understanding of how water is recycled, how clouds are formed, and why rain and hail occur.
2-3.3; 2-3.6

Dorras, Arthur. (1990*) Feel the Wind.* New York: Harper Trophy.
ISBN: 0064450953
Lexile Level: AD600L
Explains what causes wind and how it effects our environment. Includes instructions for making a weathervane.
2-3.1; 2-3.2; 2-3.3; 2-3.4; 2-3.5; 2-3.6

Trumbauer, Lisa. (2003) *What Is a Thermometer?*. Danbury, CT.: Children's Press.
ISBN: 0-516-22874-9
Lexile Level: 260L
Explains in simple language what a thermometer is and how it can be used to measure temperature in a variety of settings.
2-3.2; 2-3.3; 2-3.4

Levine, Shar and Leslie Johnstone. (2003) *First Science Experiments: Wonderful Weather*. New York: Sterling.
ISBN: 0-8069-7249-1
Lexile Level: N/A
Using simple materials, kids explore weather by "making" morning dew, creating a hailstorm from blueberries, keeping a weather diary and more. Important terms are set in bold type and defined in context.
2-3.1; 2-3.2; 2-3.3; 2-3.4; 2-3.5; 2-3.6

Gibbons, Gail. (1996) *The Reasons for Seasons*. New York: Holiday House.
ISBN: 0823412385
Lexile Level:AD620L
Colorful pictures explain the seasons and text comments on what people and animals do in each season of the year.
2-3.2

Gibbons, Gail. (1992) *Weather Words and What They Mean*. New York: Holiday House.
ISBN: 082340952X
Lexile Level:450L
Where weather come from and its common terms.
2-3.3; 2-3.5

Legault, Marie-Anne.(2004) *Scholastic Atlas of Weather*. New York: Scholastic.
ISBN: 0439419026
Lexile Level: N/A
An excellent reference book at a higher reading level. Huge, dynamic, colorful illustrations.
2-3.1; 2-3.2; 2-3.3; 2-3.4; 2-3.5; 2-3.6

Eubank, Mark.(2004) *The Weather Detectives*. Layton, Utah: Gibbs Smith, Publishers.
ISBN: 1586854127
Lexile Level:N/A
An 80 page story of three friends and their adventures as they experience the wonders of the weather. Includes basic facts about weather and weather safety and some simple experiments such as making your own rain gauge.
2-3.1; 2-3.2; 2-3.3; 2-3.4; 2-3.5; 2-3.6
Rabe, Tish.(2004) *Oh Say Can You Say What's The Weather Today?: All About Weather*(Cat in the Hats Learning Library). New York: Random House Books for Young Readers.
ISBN: 0375822763
Lexile Level: N/A
The Cat and company travel by hot air balloon up and into various weather phenomena including rain, snow, thunder, tornadoes, and even hurricanes. Along the way they learn about thermometers, anemometers, wind vanes, how to stay safe in lightning and more. Written and illustrated in "Seussian" style.

Suggested Streamline Video Resources

Air: A First Look
ETV Streamline SC
Students get an engaging introduction to the basic concepts of air. Topics include: living things need air to exist; air is real and takes up space; air has weight; air can be captured and moved from one place to another; air is a gas; air has pressure; and air expands when heated and contracts when cooled.
15:36
2-3.1

Magical Mother Nature: The Four Seasons
ETV Streamline SC
Students will gain a better understanding of how important the changing seasons are to their world. They will see that the weather changes occur each season and how these changes affect their lives and community. Animals and plants have to adapt to each season and this aspect of seasonal change is also explored.
15:28
2-3.2

Play and Discover with Digger and Splat: Seasons
ETV Streamline SC
Children join puppets Digger and Splat on an exciting " magic toy box" ride through the seasons and find out exactly what happens in spring, summer, autumn, and winter.
17:30
2-3.2

The Four Seasons
ETV Streamline SC
Students witness how changes in climate and weather affect their lives. They understand that weather changes seasonally, affecting the earth and the people who live on the earth..
15:00
2-3.2; 2-3.3

The Magic School Bus Kicks Up a Storm
ETV Streamline SC
"The Friz" transforms the bus into a Weathermobile and- in a wild ride through the skies- Ralphie becomes the meteorological superhero of his dreams.
29:24
2-3.1; 2-3.2; 2-3.3; 2-3.4; 2-3.5; 2-3.6

Weather: A First Look
ETV Streamline SC
This program describes the effects of heat from the sun on the weather; the effects of water and air on weather; and how weather changes with the seasons. Hands-on activities involve measuring temperature, precipitation, and wind.
17:00
2-3.1; 2-3.2; 2-3.3; 2-3.4; 2-3.5; 2-3.6

Weather: Changes and Measurement
ETV Streamline SC
Discover that weather is the condition of the air outside, and learn the words we use to describe the weather. Understand that weather may change from day to day, but general trends in weather can be seen from season to season. See how tools like thermometers, weathervanes, and rain gauges measure and record these weather changes.
13:00
2-3.1; 2-3.2; 2-3.3; 2-3.4; 2-3.5

Career Connections

Meteorology
Meteorology is the science of the atmosphere. It offers the opportunity of investigating the forces that shape weather and climate and how human activities can affect climate through the introduction of pollutants into the atmosphere.
In the United States the largest employer is the United States Government through the National Oceanic and Atmospheric Administration. Students interested in meteorology should view the future with a fair degree of optimism. A university degree in meteorology, combined with appropriate courses in environmental sciences, computer science and/or chemistry, opens the door to a number of careers, some within the government, others are in industry. The atmosphere plays a major role in transporting pollutants from one region of the globe to another, and, as such, is a key component of the environment. The need for professionals who understand how the atmosphere behaves can be expected to grow in the years to come, as societies around the world become more and more industrialized and eject more and more pollution into the atmosphere.

Atmospheric Research

Atmospheric scientists are working to assess the threat of global warming by collecting and analyzing past and present data on worldwide temperature trends. They use the biggest and fastest supercomputers that are available to simulate past changes in climate as well as basic atmospheric processes that are occurring today. They are trying to clear up many uncertainties about how changes in water vapor, clouds, and snow might feed

back into the greenhouse effect and alter the warming trend. They also are studying interactions among the atmosphere and the oceans, the polar ice caps, and the earth's plants and animals. These studies are part of a growing field that is known as global change research or earth systems science.

Weather Forecasting

Forecasting has always been at the heart of meteorology, and many young people have been drawn to the profession by the challenge of forecasting a natural event and seeing that forecast affect the lives of thousands of people. Meteorologists who have worked in the field of forecasting for the last 30 years or so have seen exciting advances in their ability to predict the weather. Five-day forecasts for the weather over North America and Europe now are as accurate as three-day forecasts were in 1970. Outlooks for temperature and precipitation up to seven days ahead are reasonably accurate. Some meteorologists believe that it eventually will be possible to forecast the weather up to two weeks or more in advance. New knowledge about interactions between the tropical ocean and atmosphere may make it possible to predict regional climate patterns months in advance.

Other Applications

Meteorologists provide a variety of services to industries and other organizations. Some are consulting meteorologists with their own companies and others worked for corporations. Meteorologists help planners and contractors locate and design airports, factories and many other kinds of construction projects. They provide climatological information for heating and air conditioning engineers. They testify as expert witnesses in court cases that involve the weather. Over the past 10 years or so, the fastest growing specialty of meteorology has been computer processing of weather information. Private companies have developed computerized information systems to provide specialized weather data and displays. They produce many of the colorful graphics that you see on television screens and newspaper pages.

Teaching

Atmospheric science education at the college and university level has grown tremendously in recent years. In addition to classroom teaching, many university atmospheric scientists direct research that graduate students are performing to earn their degrees. Many institutions offer a major in meteorology or atmospheric science, while others provide atmospheric science courses to supplement related science and engineering fields or as part of a broader educational curriculum. Some colleges and universities offer courses in global change and earth systems science. In high schools and lower grades, atmospheric science usually is taught as part of other natural science courses. Training in meteorology is good preparation for a career as a science teacher at any level.